AMENDMENTS TO THE CLAIMS

In the set of claims within the Application, please amend and retain each claim as hereinafter indicated.

1. (Currently Amended) A simulation system for simulating [[an]] operation of an automotive vehicle, said simulation system comprising:

an input device for providing vehicle information and path information; and

a controller coupled to [[the]] said input device[[,]] ~~said controller having~~ and operable to simulate said automotive vehicle using a vehicle computer model ~~therein~~, wherein said controller is programmed to[[,]]

determine an initial ~~non-zero~~ steering wheel angle that is input to [[the]] said vehicle computer model;

determine a ~~first~~ new steering wheel angle, which is input to [[the]] said vehicle computer model at a time later than [[the]] said initial steering wheel angle, ~~input~~ by comparing an intended vehicle path with a look ahead point ~~and an~~ on said intended vehicle path;

determine whether said vehicle computer model is understeering due to the front of said vehicle computer model plowing or slipping substantially forward in response to said new steering wheel angle;

when [[the]] said vehicle computer model is determined to be understeering, operate [[the]] said vehicle computer model with [[the]] said initial steering wheel angle ~~input~~ until ~~an error of the first steering wheel angle and the initial steering wheel angle is decreasing~~ a new steering wheel angle is determined such that said plowing or slipping substantially forward is thereby reduced[[,]] ~~wherein said controller determines when the vehicle model is understeering in response to a yaw acceleration greater than a threshold and an increasing steering wheel angle~~;

when ~~the error decreases~~ said plowing or slipping substantially forward is reduced by a new steering wheel angle, operate [[the]] said vehicle computer model with ~~the first~~ said new steering wheel angle ~~input~~; and

generate an output in response to [[the]] said vehicle computer model and [[the]] said initial steering wheel ~~input~~ angle or ~~the first~~ said new steering wheel ~~input~~ angle.

2. (Currently Amended) A simulation system as recited in claim 1, wherein said simulation system further comprises an output device that is coupled to said controller, and

[[the]] said controller ~~controls an~~ is operable to control said output device in response to [[the]] said vehicle computer model and [[the]] said initial steering wheel ~~input~~ angle or ~~the first~~ said new steering wheel ~~input~~ angle.

3. (Currently Amended) A simulation system as recited in claim 1, wherein [[the]] said vehicle computer model comprises a dynamic control model.

4-6. (Cancelled)

7. (Currently Amended) A simulation system as recited in claim 1, wherein said controller ~~determines~~ is operable to determine an increasing steering wheel angle by comparing [[the]] said initial steering wheel angle ~~input to the first~~ with said new steering wheel angle ~~input~~.

8. (Currently Amended) A simulation system as recited in claim 1, wherein said controller is operable to determine a decreasing steering wheel angle by comparing said new steering wheel angle with said initial steering wheel angle or a previously determined new steering wheel angle, and said controller is operable to ~~determines the error~~ determine a reduction in said plowing or slipping substantially forward in response to [[a]] said decreasing steering wheel angle.

9. (Currently Amended) A simulation system as recited in claim 1, wherein ~~said controller determines the error in response to a decreasing steering wheel angle and the initial steering wheel angle and the first steering wheel angle input~~ both said initial steering wheel angle and said new steering wheel angle are referenced by said controller from a zero steering wheel angle defined at said front of said vehicle computer model, and said controller is operable to determine a reduction in said plowing or slipping substantially forward in response to a decrease in the absolute value of said new steering wheel angle as compared to said initial steering wheel angle or a previously determined new steering wheel angle.

10. (Currently Amended) A simulation system as recited in claim 1, wherein ~~said controller determines the error in response to a decreasing steering wheel angle and a difference of the initial steering wheel angle and the first steering wheel angle input~~ both said initial steering wheel angle and each said new steering wheel angle are referenced by said controller from a zero steering wheel angle defined at said front of said vehicle computer model,

and said controller is operable to determine when said vehicle computer model is plowing or slipping substantially forward in response to (i) a determined yaw acceleration being greater than a predetermined threshold and (ii) a determined increase in the absolute value of said new steering wheel angle as compared to said initial steering wheel angle or a previously determined new steering wheel angle.

11. (Currently Amended) A simulation system as recited in claim 1, wherein said controller ~~determines the error in response to a decreasing steering wheel angle and a difference of the initial steering wheel angle and the first steering wheel angle input compared to a threshold~~ is operable to determine the steering wheel angle difference between said new steering wheel angle and said initial steering wheel angle or a previously determined new steering wheel angle, and said controller is operable to determine a reduction in said plowing or slipping substantially forward if said steering wheel angle difference is less than a predetermined tolerance.

12. (Currently Amended) A method of operating a vehicle computer model having vehicle information and path information therein, [[the]] said method ~~operating~~ being operable on a digital computer system and comprising the steps of:

(a) determining an initial ~~non-zero~~ steering wheel angle that is input to ~~the compute~~ said vehicle computer model;

(b) determining a ~~first~~ new steering wheel angle, which is input to [[the]] said vehicle computer model at a time later than [[the]] said initial steering wheel angle, ~~input~~ by comparing an intended vehicle path with a look ahead point ~~and an~~ on said intended vehicle path;

(c) determining whether said vehicle computer model is understeering due to the front of said vehicle computer model plowing or slipping substantially forward in response to said new steering wheel angle;

(d) determining ~~when the~~ whether said vehicle computer model is ~~understeering in response to~~ plowing or slipping substantially forward based on whether a yaw acceleration is greater than a predetermined threshold and also whether ~~an increasing~~ said new steering wheel angle is greater than said initial steering wheel angle or a previously determined new steering wheel angle;

(e) when [[the]] said vehicle computer model is determined to be understeering, operating [[the]] said vehicle computer model with [[the]] said initial steering wheel angle ~~input~~

until ~~an error of the first steering wheel angle and the initial is decreasing~~ a new steering wheel angle is determined such that said plowing or slipping substantially forward is thereby reduced;

(f) when ~~the error decreases~~ said plowing or slipping substantially forward is reduced by a new steering wheel angle, operating [[the]] said vehicle computer model with ~~the first~~ said new steering wheel angle ~~input~~; and

(g) ~~outputting results of the operating step~~ generating an output in response to said vehicle computer model and said initial steering wheel angle or said new steering wheel angle.

13-15. (Cancelled)

16. (Currently Amended) A method as recited in claim 12, wherein ~~an increasing steering wheel angle is determined~~ step (d) is at least partially accomplished by comparing [[the]] said initial steering wheel angle ~~input to the first~~ with said new steering wheel angle ~~input~~.

17. (Currently Amended) A method as recited in claim 12, said method further comprising ~~determining the error in response to a decreasing steering wheel angle~~ the steps of:

determining a decreasing steering wheel angle by comparing said new steering wheel angle with said initial steering wheel angle or a previously determined new steering wheel angle; and

operating said controller to determine a reduction in said plowing or slipping substantially forward in response to said decreasing steering wheel angle.

18. (Currently Amended) A method as recited in claim 12, said method further comprising ~~determining the error in response to a decreasing steering wheel angle and the initial steering wheel angle and the first steering wheel angle input~~ the steps of:

operating said controller so as to reference both said initial steering wheel angle and said new steering wheel angle from a zero steering wheel angle defined at said front of said vehicle computer model; and

operating said controller to determine a reduction in said plowing or slipping substantially forward in response to a decrease in the absolute value of said new steering wheel angle as compared to said initial steering wheel angle or a previously determined new steering wheel angle.

19. (Currently Amended) A method as recited in claim 12, said method further comprising ~~determining the error in response to a decreasing steering wheel angle and a difference of the initial steering wheel angle and the first steering wheel angle input~~ the steps of:

operating said controller so as to reference both said initial steering wheel angle and each said new steering wheel angle from a zero steering wheel angle defined at said front of said vehicle computer model; and

operating said controller to determine when said vehicle computer model is plowing or slipping substantially forward in response to (i) a determined yaw acceleration being greater than a predetermined threshold and (ii) a determined increase in the absolute value of said new steering wheel angle as compared to said initial steering wheel angle or a previously determined new steering wheel angle.

20. (Currently Amended) A method as recited in claim 12, said method further comprising ~~determining the error in response to a decreasing steering wheel angle and a difference of the initial steering wheel angle and the first steering wheel angle input compared to a threshold~~ the steps of:

operating said controller to determine the steering wheel angle difference between said new steering wheel angle and said initial steering wheel angle or a previously determined new steering wheel angle; and

operating said controller to determine a reduction in said plowing or slipping substantially forward if said steering wheel angle difference is less than a predetermined tolerance.

21. (Currently Amended) A method of operating a vehicle computer model having vehicle information and path information therein, [[the]] said method ~~operating~~ being operable on a digital computer system and comprising the steps of:

(a) determining a plurality of ~~non-zero~~ steering wheel ~~angle inputs~~ angles, each associated with a different time stamp[[,]] and input to [[the]] said vehicle computer model, by comparing an intended vehicle path with a look ahead point ~~and an~~ on said intended vehicle path at various times;

(b) determining whether said vehicle computer model is understeering due to the front of said vehicle computer model plowing or slipping substantially forward in response to said plurality of steering wheel angles;

(c) determining ~~when the~~ whether said vehicle computer model is ~~understeering in response to~~ plowing or slipping substantially forward based on whether a yaw acceleration is greater than a predetermined threshold;

(d) when [[the]] said vehicle computer model is determined to be understeering, ~~holding the steering wheel angle to a first~~ operating said vehicle computer model at one of [[the]] said plurality of steering wheel ~~angle inputs~~ angles until ~~an error determined as a function of the plurality of steering wheel angle inputs is decreasing~~ a later one of said plurality of steering wheel angles is determined such that said plowing or slipping substantially forward is thereby reduced;

(e) when ~~the error decreases~~ said plowing or slipping substantially forward is reduced by a later one of said plurality of steering wheel angles, operating [[the]] said vehicle computer model with [[the]] said later one of [[the]] said plurality of steering wheel ~~angle inputs~~ angles ~~subsequent to the first steering wheel angle input~~; and

(f) ~~outputting results of the operating step~~ generating an output in response to said vehicle computer model and said later one of said plurality of steering wheel angles.

22. (Currently Amended) A method as recited in claim 21, wherein ~~determining a plurality of steering wheel angle inputs comprises~~ step (a) is at least partially accomplished by ~~periodically~~ determining [[the]] said plurality of steering wheel ~~angle inputs~~ angles periodically.

23. (Currently Amended) A method as recited in claim 21, wherein [[the]] said yaw acceleration ~~comprises~~ is a normalized yaw acceleration.

24. (Currently Amended) A method as recited in claim 23, wherein [[the]] said normalized yaw acceleration ~~comprises~~ is a steering wheel angle normalized yaw acceleration.

25. (Currently Amended) A method as recited in claim 21, ~~wherein operating the computer model with the one of the plurality of steering wheel angle inputs subsequent to the first steering wheel angle input comprises operating the computer model with the one of the plurality of steering wheel angle inputs subsequent to the first steering wheel angle input that corresponds in time to a decreased error~~ said method further comprising the step of providing said output to at least one output device selected from the group consisting of a computer screen, a computer printer, a computer disk drive, and a compact disc (CD) read-only memory (ROM) drive.

26. (Currently Amended) A method as recited in claim 21, said method further comprising ~~determining the error in response to a decreasing steering wheel angle~~ the steps of:

determining a decreasing steering wheel angle by comparing a later one of said plurality of steering wheel angles with an earlier one of said plurality of steering wheel angles; and

operating said controller to determine a reduction in said plowing or slipping substantially forward in response to said decreasing steering wheel angle.

27. (Currently Amended) A method as recited in claim 21, said method further comprising ~~determining the error in response to a decreasing steering wheel angle and the previous steering wheel angle and the first steering wheel angle input~~ the steps of:

operating said controller so as to reference both an earlier one of said plurality of steering wheel angles and a later one of said plurality of steering wheel angles from a zero steering wheel angle defined at said front of said vehicle computer model; and

operating said controller to determine a reduction in said plowing or slipping substantially forward in response to a decrease in the absolute value of said later one of said plurality of steering wheel angles as compared to said earlier one of said plurality of steering wheel angles.

28. (Currently Amended) A method as recited in claim 21, said method further comprising ~~determining the error in response to a decreasing steering wheel angle and a difference of the previous steering wheel angle and the first steering wheel angle input~~ the steps of:

operating said controller so as to reference both an earlier one of said plurality of steering wheel angles and a later one of said plurality of new steering wheel angles from a zero steering wheel angle defined at said front of said vehicle computer model; and

operating said controller to determine whether said vehicle computer model is plowing or slipping substantially forward in response to a determined increase in the absolute value of said later one of said plurality of steering wheel angles as compared to said earlier one of said plurality of steering wheel angles.

29. (Currently Amended) A method as recited in claim 21, said method further comprising ~~determining the error in response to a decreasing steering wheel angle and a difference of the previous steering wheel angle and the first steering wheel angle input compared to a threshold~~ the steps of:

operating said controller to determine the steering wheel angle difference between said later one of said plurality of steering wheel angles and said earlier one of said plurality of steering wheel angles; and

operating said controller to determine a reduction in said plowing or slipping substantially forward if said steering wheel angle difference is less than a predetermined tolerance.